

CLAIMS:

What is claimed is:

1           1. A process for reforming a planar pre-finished medium density fiber (MDF) board  
2           having at least one pre-finished surface which carries at least one coating, said process  
3           comprising the steps of:

4                 placing the planar pre-finished medium density fiber board in a heated press mold;  
5                 closing the heated press mold while the pre-finished medium density fiber board is  
6           located therein;

7                 applying pressure and heat to the pre-finished medium density fiber board using said  
8           heated press mold so that said at least one pre-finished surface is reformed without cracking,  
9           bubbling, or removal of said at least one coating;

10                opening the heated press mold; and

11                removing the pre-finished medium density fiber board from the heated press mold.

1           2. The process of claim 1, wherein said heated press mold has at least one relief  
2           surface and wherein said step of applying pressure and heat is performed so that said at least  
3           one relief surface reforms at least a portion of said at least one pre-finished surface of the pre-  
4           finished medium density fiber board.

1           3. The process of claim 2, wherein said at least one relief surface is configured and  
2           said step of applying pressure and heat is performed so that said at least one pre-finished  
3           surface is reformed to a depth of no more than 0.045 inch in depth.

1           4. The process of claim 1, wherein said at least one coating comprises at least one  
2 pigment layer and at least one protective top layer applied over said at least one pigment  
3 layer.

1           5. The process of claim 4, wherein said at least one pigment layer and said at least  
2 one protective top layer are applied over at least one ground layer which serves as a primer.

1           6. The process of claim 4, wherein said at least one protective top layer includes a  
2 release agent which prevents said at least one protective top layer from adhering to the heated  
3 press mold during said step of applying heat and pressure.

1           7. The process of claim 1, further comprising the step of remoisturizing said pre-  
2 finished medium density fiber board after said step of applying pressure and heat to a  
3 predetermined moisture content.

1           8. The process of claim 1, wherein said heated press mold is heated to a temperature  
2 sufficient to soften resin in said at least one coating so that fibers and said resin tend to flow  
3 rather than break during reforming of said at least one pre-finished surface, and wherein said  
4 temperature is sufficiently low to prevent sticking of said at least one coating to the heated  
5 press mold.

1           9. The process of claim 8, wherein said heated press mold is heated to about 400°F  
2           and said pressure is about 1100 pounds per square inch during said step of applying pressure  
3           and heat.

1           10. The process of claim 1, wherein said at least one pre-finished surface is provided  
2           using a pre-finishing method comprising the steps of:

3           applying a ground layer to at least one major surface of a raw medium density fiber  
4           board;

5           applying at least one pigment layer over said ground layer; and

6           applying at least one polymer top layer over said at least one pigment layer, said at  
7           least one polymer top layer having a release agent which prevents said at least one polymer  
8           top layer from adhering to said heated press mold during said step of applying pressure and  
9           heat.

1           11. The process of claim 10, wherein:

2           said raw medium density fiber board is about 0.125 inch thick;

3           said ground layer is applied to the raw medium density fiber board with a thickness of  
4           about 1 mil;

5           said at least one pigment layer comprises two pigment layers, each of the two pigment  
6           layers having a thickness of about 1 mil; and

7           said at least one polymer top layer comprises two polymer top layers, each of the two  
8           polymer top layers having a thickness of about 0.5 mil.

12. The process of claim 1, wherein said at least one pre-finished surface is provided using a pre-finishing method comprising the steps of:

applying at least one pigment layer to at least one major surface of a raw medium density fiber board; and

applying at least one polymer top layer over said at least one pigment layer, said at least one polymer top layer having a release agent which prevents said at least one polymer top layer from adhering to said heated press mold during said step of applying pressure and heat.

13. The process of claim 12, wherein:

said raw medium density fiber board is about 0.125 inch thick;

said at least one pigment layer comprises three pigment layers, each of the three pigment layers having a thickness of about 0.3 mil; and

said at least one polymer top layer has a thickness of about 0.15 to 0.2 mil.

14. The process of claim 1, wherein:

said pre-finished medium density fiber board is a flat, pre-finished door skin;

said heated press mold has at least one relief surface; and

said step of applying pressure and heat is performed so that said at least one relief surface reforms said at least one pre-finished surface with at least one ornamental feature.

15. The process of claim 14, wherein said at least one relief surface is configured so

that said at least one ornamental feature includes simulated door panels.

1 16. The process of claim 14, wherein said at least one relief surface is configured so  
2 that said at least one ornamental feature includes a simulated wood grain texture.

1 17. The process of claim 15, wherein said at least one relief surface is configured so  
2 that said at least one ornamental feature includes both a simulated wood grain texture and  
3 simulated door panels, and wherein said simulated wood grain texture is reformed to a  
4 shallower depth than said simulated door panels.

1 18. The process of claim 14, wherein said at least one relief surface is configured and  
2 said step of applying pressure and heat is performed so that reforming of said at least one pre-  
3 finished surface is no greater than 0.045 inch in depth.

1 19. The process of claim 14, further comprising the step of remoisturizing said pre-  
2 finished medium density fiber board after said step of applying pressure and heat, to replace  
3 moisture lost by said pre-finished medium density fiber board during said step of applying  
4 pressure and heat.

1 20. The process of claim 14, wherein said heated press mold is heated to a  
2 temperature sufficient to soften resin in said at least one coating so that fibers and said resin  
3 tend to flow rather than break during reforming of said at least one pre-finished surface, and  
4 wherein said temperature is sufficiently low to avoid sticking of said at least one coating to  
5 the heated press mold.

1           21. The process of claim 14, wherein said heated press mold is heated to about 400°F  
2 and said pressure is about 1100 pounds per square inch during said step of applying pressure  
3 and heat.

1           22. The process of claim 14, wherein said at least one pre-finished surface is provided  
2 using a pre-finishing method comprising the steps of:

3           applying a ground layer to at least one major surface of a flat, raw medium density  
4 fiber board;

5           applying at least one pigment layer over said ground layer; and

6           applying at least one polymer top layer over said at least one pigment layer, said at  
7 least one polymer top layer having a release agent which prevents said at least one polymer  
8 top layer from adhering to said heated press mold during said step of applying pressure and  
9 heat.

1           23. The process of claim 22, wherein:

2           said flat, raw medium density fiber board is about 0.125 inch thick;

3           said ground layer is applied to the raw medium density fiber board with a thickness of  
4 about 1 mil;

5           said at least one pigment layer comprises two pigment layers, each of the two pigment  
6 layers having a thickness of about 1 mil; and

7           said at least one polymer top layer comprises two polymer top layers, each of the two  
8 polymer top layers having a thickness of about 0.5 mil.

1           24. The process of claim 14, wherein said at least one pre-finished surface is provided  
2 using a pre-finishing method comprising the steps of:

3           applying at least one pigment layer to at least one major surface of a flat, raw medium  
4 density fiber board; and

5           applying at least one polymer top layer over said at least one pigment layer, said at  
6 least one polymer top layer having a release agent which prevents said at least one polymer  
7 top layer from adhering to said heated press mold during said step of applying pressure and  
8 heat.

1           25. The process of claim 24, wherein:

2           said flat, raw medium density fiber board is about 0.125 inch thick;

3           said at least one pigment layer comprises three pigment layers, each of the three  
4 pigment layers having a thickness of about 0.3 mil; and

5           said at least one polymer top layer has a thickness of about 0.15 to 0.2 mil.

1           26. A medium density fiber (MDF) board product comprising a pre-finished medium  
2 density fiber (MDF) board having at least one pre-finished surface which carries at least one  
3 coating, said at least one pre-finished surface and said at least one coating on said board being  
4 press-molded to provide a reformed feature therein after application of said at least one  
5 coating.

1 27. The medium density fiber (MDF) board product of claim 26, wherein said  
2 embossed feature has a depth no greater than 0.045 inch.

1 28. The medium density fiber (MDF) board product of claim 26, wherein said at least  
2 one coating comprises at least one pigment layer and at least one protective top layer applied  
3 over said at least one pigment layer.

1 29. The medium density fiber (MDF) board product of claim 28, wherein said at least  
2 one pigment layer and said at least one protective top layer are applied over at least one  
3 ground layer which serves as a primer.

1 30. The medium density fiber (MDF) board product of claim 28, wherein said at least  
2 one protective top layer includes a release agent which prevents sticking of said top layer to a  
3 heated press mold during a press-molding operation.

1 31. The medium density fiber (MDF) board product of claim 26, further comprising a  
2 moisture content after reforming of 6% to 8%.

1 32. The medium density fiber (MDF) board product of claim 26, wherein:  
2 said raw medium density fiber board is about 0.125 inch thick; and  
3 said at least one coating includes:  
4 a ground layer applied to the raw medium density fiber board with a thickness  
5 of about 1 mil;



6 at least two pigment layers, each of said at least two pigment layers having a  
7 thickness of about 1 mil; and

8 at least two polymer top layers, each of said at least two polymer top layers  
9 having a thickness of about 0.5 mil.

1 33. The medium density fiber (MDF) board product of claim 26, wherein:

2 said raw medium density fiber board is about 0.125 inch thick; and

3 said at least one coating includes:

4 at least three pigment layers, each of said at least three pigment layers having a  
5 thickness of about 0.3 mil; and

6 at least one polymer top layer having a thickness of about 0.15 to 0.2 mil.

1 34. The medium density fiber (MDF) board product of claim 26, wherein said pre-

2 finished medium density fiber board is a flat, pre-finished door skin.

1 35. The medium density fiber (MDF) board product of claim 34, wherein said

2 reformed feature includes simulated door panels.

1 36. The medium density fiber (MDF) board product of claim 34, wherein said

2 reformed feature includes a simulated wood grain texture.

1 37. The medium density fiber (MDF) board product of claim 34, wherein said

2 reformed feature includes both a simulated wood grain texture and simulated door panels, and

wherein said simulated wood grain texture has a shallower depth than said simulated door panels.

38. A process for making a pre-finished medium density fiber (MDF) board which is reformable after finishing, said process comprising the steps of:

applying at least one pigment layer to at least one major surface of a planar raw medium density fiber board; and

applying at least one polymer top layer over said at least one pigment layer, said at least one polymer top layer having a release agent which prevents said at least one polymer top layer from adhering to said heated press mold during press molding,

wherein said at least one pigment layer and said at least one polymer top layer are applied using materials and thicknesses thereof which are capable of withstanding press-molding at temperatures and pressures sufficient to reform said at least one pigment layer and said at least one polymer layer, without cracking, bubbling, and adherence to a press mold.

39. The process of claim 38, wherein:

said raw medium density fiber board is about 0.125 inch thick;

said at least one pigment layer comprises three pigment layers, each of the three pigment layers having a thickness of about 0.3 mil; and

said at least one polymer top layer has a thickness of about 0.15 to 0.2 mil.

40. The process of claim 38, wherein said at least one pigment layer and said at least one polymer top layer are applied using a rolling process.